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ABSTRACT

This training outline for rubber tire dozer operators, one in a series of eight outlines, is designed primarily for company training foremen or supervisors and for trainers to use as an industry-wide guideline for heavy equipment operator training in open pit mining in British Columbia. Intended as a guide for preparation of lesson plans both for classroom and on-the-job training activities, this outline is divided into eight modules. Each module is based on 1 to 13 objectives. For each objective, key points and procedures are outlined. Module topics are basic safety and operating rules, communications, indicators and controls, pre-start and operational checks, basic operation, rubber tire dozer production operation, service and refuel, and special assignments. A skill profile chart is attached. (YLB)

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OPEN PIT MINING JOB TRAINING SERIES

RUBBER TIRE DOZER OPERATOR

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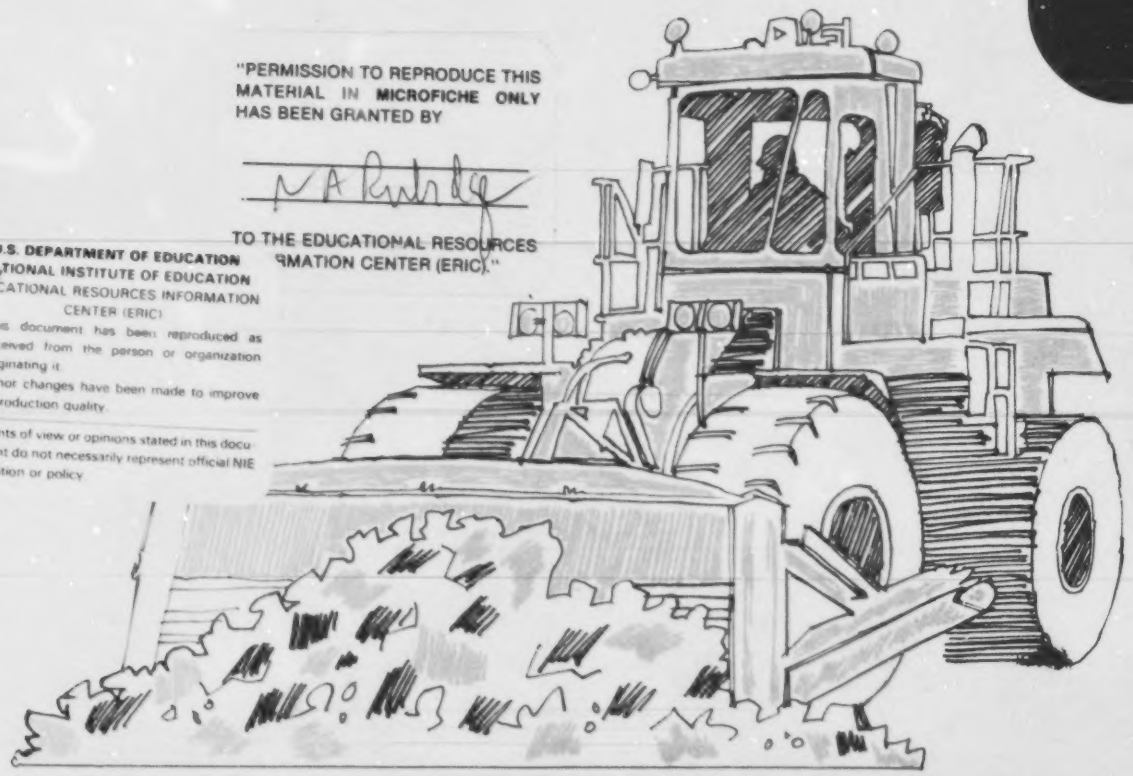

Titles in the Open Pit Mining Job Training Series

- Haulage Truck Operator
- Rubber Tire Dozer Operator
- Track Dozer Operator
- Front End Loader Operator
- Grader Operator
- Rotary Drill Operator
- Shovel Operator
- Heavy Duty Tireman

OPEN PIT MINING
JOB TRAINING SERIES
RUBBER TIRE DOZER OPERATOR

A joint project
of the
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and
member companies of the
Mining Association of British Columbia

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INTRODUCTION

The *Open Pit Mining Job Training Series* was developed through the co-operation of member companies of the Mining Association of British Columbia and the Post-Secondary Department of the Ministry of Education. The series was initiated by the education and training committee of the Mining Association. The committee chairman, Les Redford, has given invaluable support throughout the project.

The training outlines in the series are primarily written for company training foremen or supervisors and for trainers to serve as an industry-wide guideline for heavy equipment operator training in open pit mining in British Columbia.

THE DEVELOPMENT PROCESS

DACUM

Each of the training outlines in the series was developed using the DACUM process, a systematic model for developing modular training programs. A series of four booklets describing the DACUM process is available from:

Publication Services Branch,
Ministry of Education,
878 Viewfield Road,
Esquimalt, B.C.
V9A 4V1

Telephone: (604) 387-5331

Project Initiation

The Mining Association's education and training committee gave early direction to the project. Committee members actively working with chairman Les Redford were:

Bill Scribner, Brenda Mines Limited

Bill Dement, Craigmont Mines Limited

Tom Nicholson, Mining Association of British Columbia

Glen Martin, Similkameen Division, Newmont Mines Limited

Vic Dawson of the Ministry of Energy, Mines and Petroleum Resources also participated with the committee in setting directions.

The first workshop with representatives from the mining industry, the Mining Association, and the Ministry of Education was held in April, 1979. Project goals and priorities were set and an activity plan was established.

DACUM Workshop and Skill Profile Charts

A three day DACUM workshop was held in June 1979. This workshop was conducted by Diane Morrison, a program developer from the Ministry of Education. The following representatives participated in the workshop:

Fred Mason, Afton Mines Limited

Ivan Moser, Afton Mines Limited

Bill Savilow, B.C. Coal Ltd.

Vern Bouck, Bethlehem Copper Corporation

Ray Chenier, Bethlehem Copper Corporation

Bill Scribner, Brenda Mines Limited

Ron Owens, Cyprus Anvil Mining Corporation

Dennis LeDuc, Endako Mines Division, Placer Development Limited

Terry Perrier, Fording Coal Limited

Barry Tripp, Granisle Mine, Noranda Mines Limited

Tom Nicholson, Mining Association of British Columbia

Fred Savage, Ministry of Education

Jack Murray, Noranda Mines Limited

Ed Rudolph, Noranda Mines Limited

Don Rankin, Similkameen Division, Newmont Mines Limited

Don Barker, Zapata Granby Limited

The DACUM workshop produced heavy equipment operator skill profile charts. Each chart listed the essential skills needed by the operator on the job. During the following months, the skill profile charts were circulated to representatives throughout the mining industry for validation.

Training Outlines

Once the skill profile charts were approved, the next step was to write training outlines. For each skill on the charts, one or more objectives were written that state what the trainee must be able to perform at the end of the training program to demonstrate mastering the skill. A trainee who can do all the objectives in the outlines is considered to have the skills required to perform on the job. A training outline developed using this approach is often referred to as a performance or competency-based outline.

Bill Savilow from B.C. Coal Ltd. (formerly Kaiser Resources) was selected to write six training outlines from the skill profile charts. He worked part-time on the outlines while continuing his responsibilites in the training department at B.C. Coal. Bill wrote the *Haulage Truck Operator, Rubber Tire Dozer Operator, Track Dozer Operator, Front-End Loader Operator, Grader Operator* and *Rotary Drill Operator* outlines during 1980 and 1981.

Don McColman of Newmont Mines wrote *Heavy Duty Tireman,* and Larry Hartley of Utah Mines wrote *Shovel Operator.*

Bruce Kurschenska of B.C. Coal Ltd. supplied the photographs upon which the cover illustrations are based.

Reviewing the Training Outlines

Throughout 1980 and 1981 a series of workshops were held to review the outlines. The workshops were conducted by Diane Morrison and attended by participants from various mining companies. The participants who played an extremely important role in examining and revising the training outlines to reflect training standards required across the industry were:

Hans Geertsema, Afton Mines Limited

Fred Mason, Afton Mines Limited

Bill Savilow, B.C. Coal Ltd.

Vern Bouck, Bethlehem Copper Corporation

Jerry LeBlanc, Bethlehem Copper Corporation

Don Miller, Brenda Mines Limited

Gerry Cooper, Brinco Mining Limited

Richard Schwengler, Equity Silver Mines Limited

Don Fraser, Cyprus Anvil Mining Corporation

Terry Wozniak, Fording Coal Limited

Norm Myhre, Gibraltar Mines Limited

George Sutherland, Highmont Operating Corporation

Fred Savage, Ministry of Education
Don McColman, Newmont Mines Limited
John Graham, Noranda Mines Limited
Charles Heikkila, Noranda Mines Limited
Les Redord, Noranda Mines Limited
Dennis LeDuc, Placer Development Limited
Larry Hartley, Utah Mines Limited

In addition, the following individuals participated in the review workshop for the *Rubber Tire Dozer Operator* outline:

Doug Greff, B.C. Coal Ltd.
Jim Bertrand, Brenda Mines Limited
A.B. Wiebe, Crowsnest Resources Ltd.
Gerry Charette, Crowsnest Resources Ltd.
Mike Taillon, Fording Coal Limited
Jim Cahoon, Noranda Mines Limited

Field-testing the Haulage Truck Operator Outline

In June 1980 three companies (B.C. Coal Ltd; Noranda Mines Limited, Granisle Mine; Brinco Mining Limited) offered to field-test the new *Haulage Truck Operator* outline for a six month period and report back to the group. During the fall, it was further agreed that the other participating mines in the project would also field-test the outline and would complete a questionnaire. In the winter of 1981 all mines reported that the outline had been used successfully to improve the truck operator training at their mine and some reported making major revisions of their training programs as a result of the outline.

USE OF TRAINING OUTLINES

Additions and Modifications

References are made in the outlines to areas where policies will vary from company to company and it is up to trainers to insert their company policies in these places.

Each training outline is based on a specific manufacturer and model of equipment, for example the rubber tire dozer is a Caterpillar 824. In order to use the material for a different manufacturer or model, a trainer must review the outline and make necessary modifications. It is anticipated that only the section on gauges and controls will need major changes.

For Lesson Plans

The outlines do not contain lesson plans. Rather the trainer should use the outlines as a guide when preparing lesson plans both for classroom and on-the-job training activities. Trainers are encouraged to expand upon the outlines to suit their own situation.

For Testing

The outline should also be used as a guideline for written, oral, and practical testing. Trainers should ensure that upon completion of training, each trainee can perform every objective listed in the outline. It will take time and experience on-the-job before a trainee becomes a proficient operator. Regular on-the-job monitoring by supervisors and trainers can greatly assist the trainee in developing and maintaining the skills needed to be a heavy equipment operator.

Sample tests for the outlines have been written and are available to trainers from:

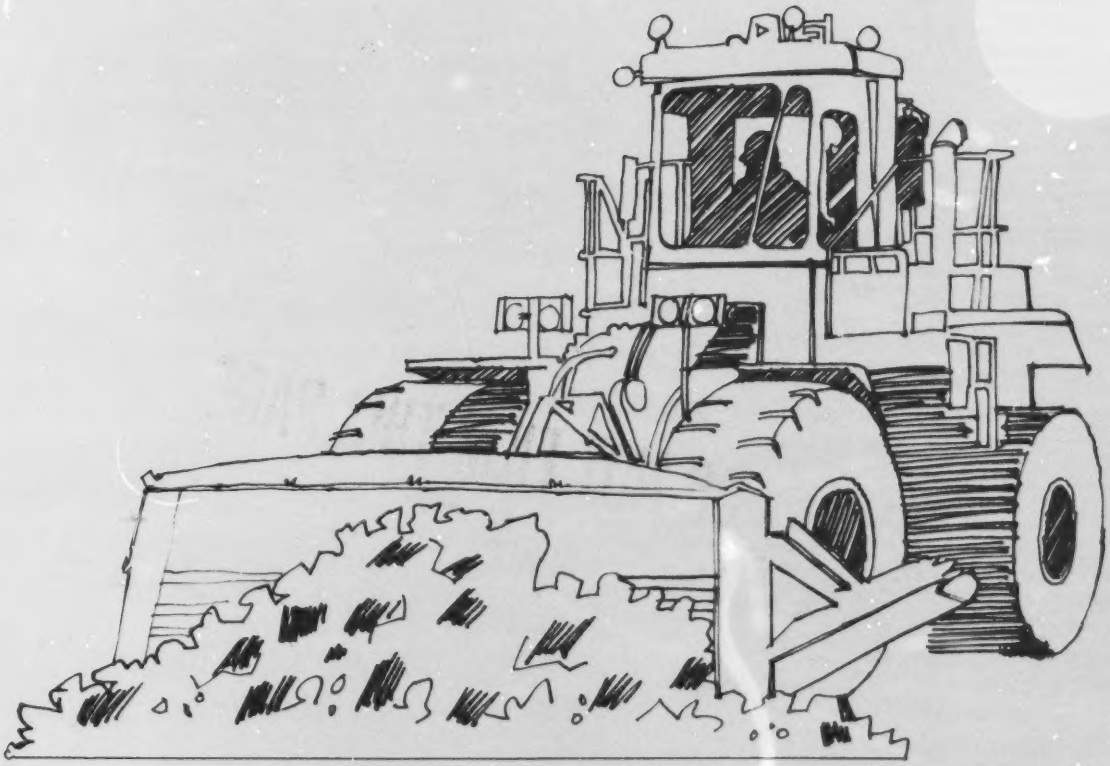
Research & Curriculum Development Branch,
Ministry of Education,
7451 Elmbridge Way,
Richmond, B.C.
V6X 1B8
Telephone: (604) 278-3433

For Trainees

The outlines provide valuable information on operating heavy equipment and give clear statements on what trainees must be able to do by the end of their training. Therefore, it is recommended that trainees be given a copy of both the skill profile chart and the outline.

BASIC SAFETY AND OPERATING RULES

module 1



OBJECTIVE 1-1

The dozer operator will explain how safety and operating rules set by the company and the *Mines Regulation Act* protect the operator and fellow workers on the mine site.

KEYPOINTS/PROCEDURES

1. The following are basic safety and equipment operating rules. Individual companies should incorporate their own safety rules into this material.

2. **Personal wear**

   The safety rules concerning personal wear are set for the protection of the rubber tire dozer operator and include proper:

   - Hard hats
   - Footwear
   - Eye protection
   - Hearing protection
   - Gloves

3. **Personal conduct**

   Rules concerning personal conduct are enforced for the safety of all personnel on the mine site and cover:

   - Horseplay
   - Reading on the job
   - Alcohol and drugs

4. **Pre-start check**

   Safety rules ensure personal protection while conducting pre-start checks and also ensure that the rubber tire dozer is in a safe operating condition before it is put into production. Special caution is required when:

   - Working around moving components on the rubber tire dozer such as fans and belts.
   - Removing radiator caps.
   - Climbing on or off of the rubber tire dozer.

   It is essential to report immediately any operational problems with the brakes or steering. The rubber tire dozer must always be equipped with a fire extinguisher.

   Rules 263 (d) and 263 (e) of the *Mines Regulation Act* and Rules 195 (d) and 195 (e) of the *Coal Mines Regulation Act* state:

   > (d) The driver or operator of any vehicle or mobile equipment shall examine and test his equipment at the beginning of each shift before putting it into use; and if any unsafe condition is noted, such equipment shall not be used and the immediate supervisor shall be notified.
   >
   > (e) For each vehicle or piece of mobile equipment, a logbook or other suitable record shall be maintained, in which shall be entered a record of all unsafe conditions and the repairs made, and all notations shall be signed by the person making the entry, and the logbook or records shall be available for inspection at all times.

   It is the rubber tire dozer operator's responsibility to comply with these rules.

5. Operating

Operating rules ensure the safety of the rubber tire dozer operator and of all other persons on the mine site. Only personnel authorized by the company are allowed to operate rubber tire dozers.

There are blind areas immediately surrounding the rubber tire dozer. Before the rubber tire dozer is moved inspect the area on foot in the yard or visually in the pit. Rule 264 (a) (iii) of the *Mines Regulation Act* and rule 196 (a) (iii) of the *Coal Mines Regulation Act* state:

> No person shall operate or put in motion any vehicle or mobile equipment unless he has just previously inspected on foot the area over which the equipment is to be moved.

The rubber tire dozer operator must immediately follow all warning signals given by others on the mine site including horns, lights and hand signals. These signals are covered in OBJECTIVE 2-1.

6. Traffic control scheme

It is the rubber tire dozer operator's responsibility to obey the traffic control scheme as set out by the company (OBJECTIVE 1-4). Rule 264 (b) of the *Mines Regulation Act* and rule 196 (b) of the *Coal Mines Regulation Act* both state:

> The owner, agent, or manager of every mine shall prepare a traffic control scheme for his operation and shall have it accepted by the inspector, and the scheme shall show the maximum allowable speeds for the vehicles in use, rules for passing, "stop" and "yield" locations, priority rules for various vehicles, rules for night operation, maximum operating grades, emergency run-off protection, and such other information as may be required by the Inspector.

7. Dumping

Dumping rules ensure a safe and efficient operation at the dumping area. The dump supervisor is the key person and has direct control of activities in the dump area. The rubber tire dozer operator should be alert for the following conditions:

- Settling dumps with either cracks or slippage.
- Improper inclines to the edge of the dump.
- Improper consistency of the berm (snow and ice; sand or fine grade materials).
- Additional equipment around the dump.
- Excessive traffic in the area.

Rule 272 of the *Mines Regulation Act* and rule 203 of the *Coal Mines Regulation Act* state:

> (a) No material shall be dumped from any vehicle over a bank more than ten feet high unless
>
> (i) there is available an effective ridge of material, or an anchored dump block, to act as a backstop; and
>
> (ii) there is a dump supervisor who shall be responsible for signalling and truck-dumping procedures and for checking and reporting the stability of the dump; but the Inspector may exempt an operation from the requirement of this paragraph where:

(A) the haulage truck capacity is less than forty tons; or

(B) the tonnage being dumped is less than five hundred tons in an eight-hour shift; or

(C) the nature of the material being dumped does not require a dump supervisor; but in no case shall dumping be done from an unsafe bank.

(b) Where a dump supervisor is employed at a dump, no person shall move or dump a truck at the dumpsite unless and until he receives a directional order from the dump supervisor.

The rubber tire dozer operator may be called upon to act as the dump supervisor and use all of the proper dump supervisor procedures.

8. Servicing

Servicing rules ensure the safety of all personnel in the service area. The rubber tire dozer operator must take the following precautions:

- Never smoke or strike an open light while fuelling.
- Always clear the area of people before moving the rubber tire dozer in or out of the service area.
- Shut down the engine during servicing whenever possible.
- Remove the radiator cap only when the engine has cooled down and use extreme caution.
- Lower the blade to the ground slowly (do not drop).
- The operator should be out of the rubber tire dozer during servicing.

Servicing procedures are covered in Module 7.

9. Parking

Safe parking procedures are established to provide safety for the people working around the rubber tire dozer. The operator must obey the following procedures for leaving the rubber tire dozer:

a. Park on safe and level ground.

b. Lower the blade assembly to the ground, applying slight down pressure.

c. Set the brakes and engage the park brake.

d. Place the transmission control into neutral and engage transmission control lock.

e. Allow a cooling period for the engine of at least 5 minutes.

f. Shut off the engine and turn off the starter key.

OBJECTIVE 1-2

The rubber tire dozer operator will explain the importance of reporting accidents and injuries.

KEYPOINTS/PROCEDURES

1. **Accidents**

   All accidents must be reported to the supervisor as soon as possible. In the event of a serious accident, do not disturb the accident scene unless there is a risk of further damage or a danger to personnel.

2. **Injuries**

   All injuries, no matter how slight, must be reported to the supervisor and to the first aid station. Any injury where the skin is broken must be treated to avoid infection. In cases of serious injury, do not move the victim — send for the first aid attendant.

3. **Investigations**

   Reporting accidents and injuries makes way for an investigation to be carried out to determine the cause. These investigations often lead to new rules or procedures that create a sager working environment for all employees.

   Note:

   It is the responsibility of all employees to report any hazardous act or condition to their supervisors immediately.

OBJECTIVE 1-3

The rubber tire dozer operator will describe the changing conditions that can occur at the mine site and explain the importance of staying alert to these changes.

KEYPOINTS/PROCEDURES

1. **Weather**

   Rain, snow and fog each have an effect on the operators visibility. Additional caution is required while operating under poor weather conditions.

2. **Roads**

   Road conditions change with the changing weather, e.g., slippery conditions in cold weather and dusty conditions when it's hot. The operator must stay alert to slippery conditions as the rubber tire dozer can slide under icy conditions.

3. **Other equipment and ground personnel**

   The rubber tire dozer operator must be alert at all times to other equipment working or travelling in the vicinity. The operator must also be aware that ground personnel can come into the working area.

4. **Traffic control scheme**

   While trucks are being loaded at the working face the traffic control scheme is constantly changing. The rubber tire dozer operator must be aware of this movement.

   Usually, the traffic control scheme at the dump area and on the haul roads changes very little, but the rubber tire dozer operator should be aware that a change can occur.

5. **Working conditions**

   Working conditions are constantly changing at the work face. The rubber tire dozer operator must watch for the movement of equipment and the sluffing or rolling down of material from the face. At the dump the rubber tire dozer operator must be alert to the movement of equipment and to the possibility of the dump moving or cracking.

6. **Dozer performance**

   An alert operator can determine a change in the rubber tire dozer's performance by sound and by comparing how the rubber tire dozer reacts under normal working conditions. For example, the rubber tire dozer operator can tell if the equipment is losing power.

7. **Light**

   The change from daylight to darkness and vice-versa creates operating conditions that demand added attention and alertness.

OBJECTIVE 1-4

The rubber tire dozer operator will describe the traffic control scheme at the mine site for the haulage roads, the loading area and the dumping area.

KEYPOINTS/PROCEDURES

1. **Right of ways**

   The right of way priority system can change from property to property. An example of a right of way priority system is:

   a. Ambulance, rescue or fire trucks.

   b. Buses.

   c. Road maintenance equipment.

   d. Loaded production trucks.

   e. Empty production trucks.

   f. Explosive trucks and fuel trucks.

   g. All other trucks or equipment (dozers).

   Caution:

   Remember, a right of way can only be given, it cannot be taken.

2. **Keep right**

   At all times the rubber tire dozer operator must keep to the right, unless otherwise directed by the supervisor or by proper signs.

3. **Traffic signs**

   All traffic signals and signs must be obeyed including:

   - Lights at the breaker station or crusher (if red light appears at the crusher hopper, do not push material into the hopper).
   - Stop signs or yield signs.

4. **Merging traffic**

   Merging traffic must yield to through traffic unless otherwise informed by the supervisor.

5. **Changing road systems**

   When road systems change, operators must be forewarned and also advised as to which traffic has the right of way. Rubber tire dozer operators should always yield to faster moving equipment.

6. **Parking**

   Dozers should be parked on as level and safe an area as possible. A rubber tire dozer should never be parked or left within 50 feet of the work face. When parking next to other equipment, follow the minimum distances set by the company.

OBJECTIVE 1-5

The rubber tire dozer operator will explain the normal braking techniques for the dozer.

KEYPOINTS/PROCEDURES

1. **Normal braking**

   For normal braking the rubber tire dozer operator should:

   a. Reduce the engine speed by letting off the pressure on the accelerator pedal.

   b. Gradually depress the service brake pedal to stop the rubber tire dozer evenly.

   c. Hold the rubber tire dozer at a stop with the service brake pedal.

   d. Place the transmission control lever into neutral.

   e. Apply the park brake by pulling up the park brake knob.

   f. Lower the blade to the ground and apply slight pressure.

   g. Engage the transmission lock.

   h. After a cooling down period of 5 minutes shut off the engine.

OBJECTIVE 1-6

The rubber tire dozer operator will describe the emergency braking and steering procedures.

KEYPOINTS/PROCEDURES

1. In an emergency such as engine failure or the loss of steering, the rubber tire dozer operator should simultaneously:
   a. Reduce the engine speed.
   b. Apply the service brakes.
   c. Lower the blade and gently apply pressure to assist in stopping. If too much pressure is applied the blade can cut in too abruptly, or catch an obstruction and cause too sudden a stop.
   d. Steer the rubber tire dozer towards the closest safe area. The emergency steering is very stiff and requires two hand steering.
   e. After the rubber tire dozer is stopped use standard parking procedures.
   f. Report the situation to the supervisor.
   g. Look for the problem.
2. Rubber tire dozers equipped with supplementary steering have an indicator on the dash that lights up if there is a malfunction in normal steering or if the engine fails. Supplementary steering only works if the rubber tire dozer is in motion. Follow the emergency and braking procedures if the indicator comes on, then investigate the problem.

OBJECTIVE 1-7

The rubber tire dozer operator will explain why it is important to maintain good housekeeping practices.

KEYPOINTS/PROCEDURES

1. The importance of good housekeeping is to maintain a safe and pleasant environment to work in. Employees have the responsibility to keep their work area in good condition. Good housekeeping is an essential part of each employee's job. A disorderly and dirty work area can cause accidents, personal injuries and low morale. Good housekeeping on the rubber tire dozer is essential for safety and includes the following:

   - Keep all windows and mirrors clean for good visibility.
   - Keep the dash clean, primarily the indicators, so that they can be accurately read.
   - Keep the cab clean of all paper, rags, dirt, mud and aerosol cans.

   Caution:

   Aerosol cans can cause serious injuries by exploding.

OBJECTIVE 1-8

The rubber tire dozer operator will explain the company blasting and guarding procedures.

KEYPOINTS/PROCEDURES

1. The blasting procedure is enacted on the day of the blast. Employees should be notified of the blast, although this notifiction is not the final precaution. Before blasting, the supervisor makes a careful physical check of the area to ensure that no one is there. All employees are evacuated to a safe distance. Once the area has been evacuated, all access roads are closely guarded to prevent access into the blast area.

2. The guards have authority to stop anyone from entering the blast area. Guards should be visibly identifiable (for example, they can have a colored vest issued by supervision). They should remain at the location designated by supervision, until relieved by the person who designated them as guards. Should any irregularities occur, it is the guard's responsibility to immediately notify the supervisor of the problem.

3. Frequently, the rubber tire dozer operator is used as a guard. Operators acting as guards should be on the ground, not sitting in the cab, in order to stop all traffic from entering the blast area.

OBJECTIVE 1-9

Given a map of the pit area layout, the rubber tire dozer operator will give the proper names of pits and haul roads and locate the dump areas by name or number. The dump areas include waste dumps, stockpiles and breaker station or crusher station locations.

KEYPOINTS/PROCEDURES

1. Each property is different in layout, and in the names and numbers of the dumps, pits, etc.
2. Besides knowing the basic layout of the pit area, some properties may also want employees to know the shovel locations.

OBJECTIVE 1-10

The rubber tire dozer operator will explain and demonstrate the proper use of fire suppression systems and fire extinguishers.

KEYPOINTS/PROCEDURES

1. **Fire suppression systems**

   The fire suppression system consists of dry chemical pressurized tanks mounted on the rubber tire dozer. Hoses run from the tanks to nozzles at all critical areas of the dozer. Shut down the engine first and then manually pull the button that releases the pressure sources and the chemical is spread. This can be performed either from the cab or from the ground.

2. **Fire extinguishers**

   Most rubber tire dozers are only equipped with a hand fire extinguisher. Before using the fire extinguisher shut down the engine and tap the nozzle on the fire extinguisher. Aim the chemical flow at the base of the fire and move the flow from side to side. This side to side action forces the flames away from the source and has a cooling effect. The chemical cuts off the oxygen at the source of the flame and puts out the fire.

3. Speed is the important factor in combating a rubber tire dozer fire. Call for assistance by radio or whatever means are possible. First shut down the rubber tire dozer's engine. Suppress the fire quickly and avoid being faced with a more widely spread fire that is difficult to contain.

4. Extinguishers should be turned over and bled out after use. This prevents the plugging of the hoses after they are re-charged.

OBJECTIVE 1-11

The rubber tire dozer operator will describe a miss-hole and state the procedures for reporting the location of a miss-hole.

KEYPOINTS/PROCEDURES

1. A miss-hole is a drill hole that was loaded with explosives which didn't explode during the blast, leaving the hole still full of powder.
2. A rubber tire dozer operator, noticing a miss-hole while pushing material, should notify the supervisor immediately. Properly mark the miss-hole and do not operate within 25 feet of it.

OBJECTIVE 1-12

The rubber tire dozer operator will explain the company's power cable handling policy.

KEYPOINTS/PROCEDURES

1. Each company should establish a power cable handling policy to be followed by all personnel handling power cable. The policy should include the following precautions:

   - 10,000 volt hot gloves and other approved protective devices must be used at all times when handling power cable. Do not step on power cable or allow power cable to come in contact with any other part of the body. Inspect the hot gloves before use and discard them if they are defective. Do not use hot gloves if they are wet inside. Hot gloves must be covered with leathers and should not be used for any purpose other than handling power cable.
   - All power cable attached to sub-stations or switch houses must be treated as energized.
   - Never place any part of the body, even if protected by hot gloves, on or near cable terminals located inside potheads and junction boxes.
   - No one, other than an authorized person, is to energize, de-energize, connect or disconnect power cables.
   - Cable arches must be treated the same as power cable when the cable over the arch is connected to a sub-station or switch house. Report any cuts or bruises in the cable. Do not handle damaged power cable unless it has been checked by an authorized person. Only qulified electricians are authorized to make repairs to power cables.
   - Never run over unprotected power cable with any vehicle or piece of equipment.
   - Never pull more than 75 feet of power cable in a single pull. Power cables can be damaged by stretching.
   - When junction boxes and potheads are being moved, they must be adequately supported and kept clear of the pit floor. Rough handling of junction boxes can cause damage to the boxes and to the power cable by the flexing of the cables at the boxes.
   - Disconnected power cable retains a residual charge of about 110 volts. Caution must be used when handling disconnected cable.
   - The input side (hotside) of the switch house must be padlocked, if it is a pothead so that it cannot be removed.

OBJECTIVE 1-13

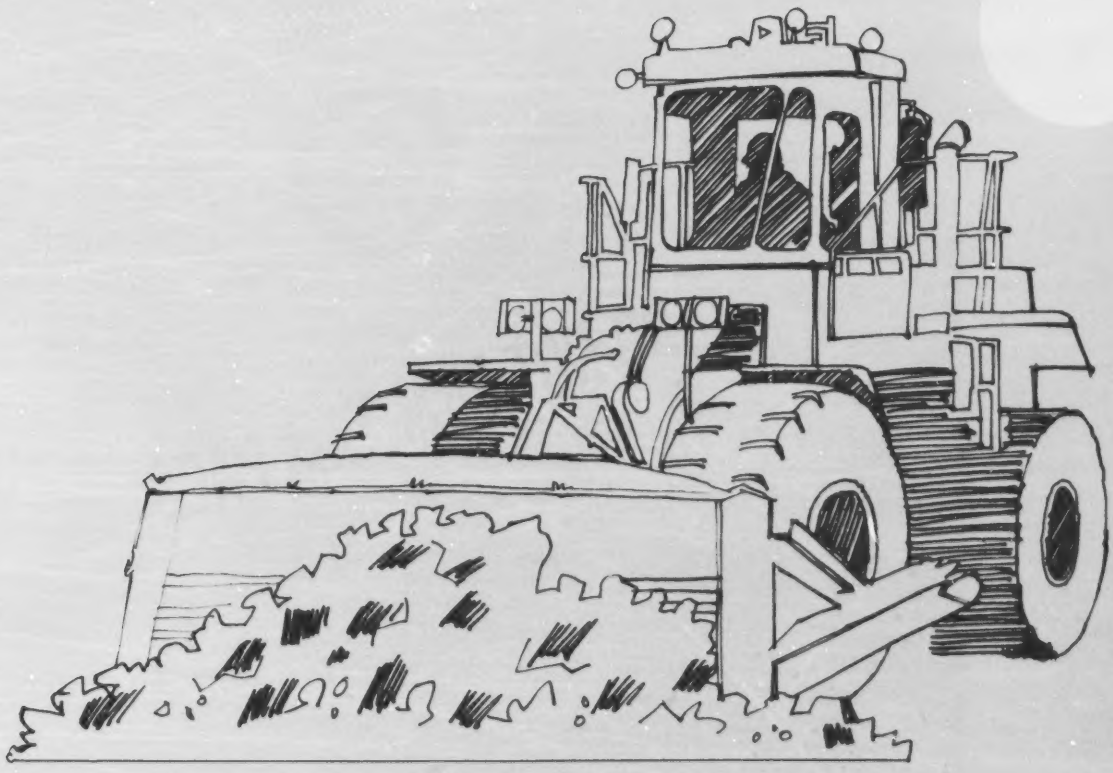
The rubber tire dozer operator will explain the company's lock-out procedures.

KEYPOINTS/PROCEDURES

1. To ensure the safey of maintenance and operating personnel, the company should establish a procedure for locking-out equipment, to be followed by all personnel.
2. Locking-out equipment means that wherever the possibility of equipment starting, energizing, or moving exists, which can create a hazardous situation, that piece of equipment should be locked-out and tagged by the operator. A lock-out procedure is designed to prevent accidents and personal injury. Never remove another worker's padlock or tag without authorization. Check with the supervisor for instructions.
3. The rubber tire dozer operator is required to know the location of the lock-out station for the rubber tire dozer, and must always check the station for padlocks or "do not operate" tags before starting the rubber tire dozer.

COMMUNICATIONS

module 2



OBJECTIVE 2-1

The rubber tire dozer operator will:

a. **Describe the horn signals used by the truck, shovel and loader operators at the property.**

b. **Describe the traffic light system at the property for dumping at the breaker station, grizzly or crusher.**

c. **Demonstrate the hand signals used at the property, including the procedures for staying in a safe, visible position at all times.**

KEYPOINTS/PROCEDURES

1. A signal for HELP WANTED should be established at the property and all of the employees informed of it.

2. **Truck operator's signals**

   The rubber tire dozer operator is required to know these horn signals:

   - Start engine — one blast.
   - Stop — one blast.
   - Go ahead — two blasts.
   - Back up — three blasts.

   All trucks should be equipped with automatic back up horns. The rubber tire dozer operator should be alert to a haulage truck backing up.

3. **Shovel operator's or loader operator's signals**

   The rubber tire dozer operator is required to know the following signals given by the shovel and loader operators:

   - Stop — one blast.
   - Go ahead — two blasts.
   - Back up — three blasts.
   - Reposition or tail load — four blasts.

4. **Rubber tire dozer operator's signals**

   The rubber tire dozer operator is required to give the following signals to the operators of other pieces of equipment:

   - Stop — one blast.
   - Go ahead — two blasts.
   - Back up — three blasts.

5. **Lights at the breaker station, grizzly or crusher**

   Mines that require rubber tire dozers to push material into a grizzly, bin or crusher with a signal light system attached should require the operators to know the following lights:

   - Do not push material into bins, crushers or grizzlies — red.
   - All clear to push material — green.
   - Wait — amber.

6. A system for trucks moving in, dumping, and moving out of the dump area must be established at each mine and must be followed by everyone in the dump area.

7. **Rubber tire dozer operator's hand signals**

   - Back up — The rubber tire dozer operator rotates the right arm in a circular clockwise motion to signal the truck back towards the safety berm.
   - Stop — Once the truck has reached the desired place at the berm, the rubber tire dozer operator signals a stop by moving the right arm up and down.
   - Dump — When the truck is stopped in the position designated by the rubber tire dozer operator, the signal to dump is given by holding the right arm straight up in the air.
   - Move out — Once the truck has dumped its load over the berm, the rubber tire dozer operator signals the truck to move out.

   Caution:

   The truck must never move until the dump body is completely down and the rubber tire dozer operator has signalled the truck to move out.

8. The rubber tire dozer operator may be required to give light signals at the dump for nighttime operation.

OBJECTIVE 2-2

Given a sample of the reporting forms used by the company, the rubber tire dozer operator will complete production reports, timecards, and the daily logbook.

KEYPOINTS/PROCEDURES

1. **Production reports**

   The production reports are to be filled out to include the:

   - Area code number of the pit in which the operator is working.
   - Code number of the material the operator is pushing or the type of work being performed.
   - Equipment number of the rubber tire dozer that the operator is using.

   Production reports are used for costing and planning purposes. Therefore, it is imperative that they are accurate.

2. **Timecards**

   Timecards should include the:

   - Area code number of the pit in which the rubber tire operator is working.
   - Code number of the material the operator is pushing or the type of work being performed.
   - Equipment number of the rubber tire dozer that the operator is using.

3. **Daily logbooks**

   The daily logbooks are filled out regularly and cover the following information:

   - General repairs to the rubber tire dozer.
   - Fuel up times so that the oncoming rubber tire dozer operator knows approximately how much fuel is left.
   - Any general information, for example on the steering and brakes which can help the oncoming operator.

   Rule 263 (e) of the *Mines Regulation Act* and rule 195 (e) of the *Coal Mines Regulation Act* state:

   > (e) For each vehicle or piece of mobile equipment, a logbook or other suitable record shall be maintained, in which shall be entered a record of all unsafe conditions and the repairs made, and all notations shall be signed by the person making the entry, and the logbook or records shall be available for inspection at all times.

4. Operators should report unsafe or hazardous equipment conditions first to the supervisor and then to the oncoming rubber tire dozer operator. It is important that the oncoming operator knows the prior shift's history of the rubber tire dozer, including repairs.

OBJECTIVE 2-3

The rubber tire dozer operator will operate the mobile radio on the mine site and explain the proper procedures for its use.

KEYPOINTS/PROCEDURES

1. The proper and effective use of the radio is important. Take the following steps:
   a. Identify the sender by unit or vehicle number.
   b. Identify the receiver by unit or vehicle number.
   c. Wait until the receiver acknowledges.
   d. Relay message in a clear and precise manner.
   e. State whether the call is an emergency or not.
2. Radio use is restricted to necessary operational transmissions. Use no profane language over the radio at any time.
3. In the event of an unsafe situation or an emergency, contact the dispatcher or supervisor immediately. If radio silence is necessary, either the dispatcher or the immediate supervisor can call for it. This depends on procedures established at the mine.

OBJECTIVE 2-4

The rubber tire dozer operator will explain the different survey stakes used at the mine site.

KEYPOINTS/PROCEDURES

1. Companies have their own color and flagging codes and should include this information.

2. **Primary control points**

   The primary control point is the basis for all survey work in the area and should be set with the utmost accuracy.

3. **Secondary control hubs**

   Secondary control hubs are set from the primary control point and are the basis of all the actual field work.

4. **Batterboards**

   Batterboards are used for sighting bench grades.

5. **Drill hole stakes**

   Drill hole stakes locate the position of a drill hole for blasting. On the stake is the number of the blast hole and the depth it is to be drilled. These stakes are retained after drilling, for loading information.

6. **Drill limit stakes**

   Drill limit stakes mark the drilling boundary in order to avoid unnecessary drilling.

7. **Digging limit stakes**

   Digging limit stakes indicate the limit the shovel is to dig. Digging beyond this stake can be a wasted effort.

8. **Blast boundaries**

   Blast boundary stakes indicate the limit of cleanup required to start drilling a new blast area, and possibly the limit of digging of a previous blast.

9. **Dump monitors**

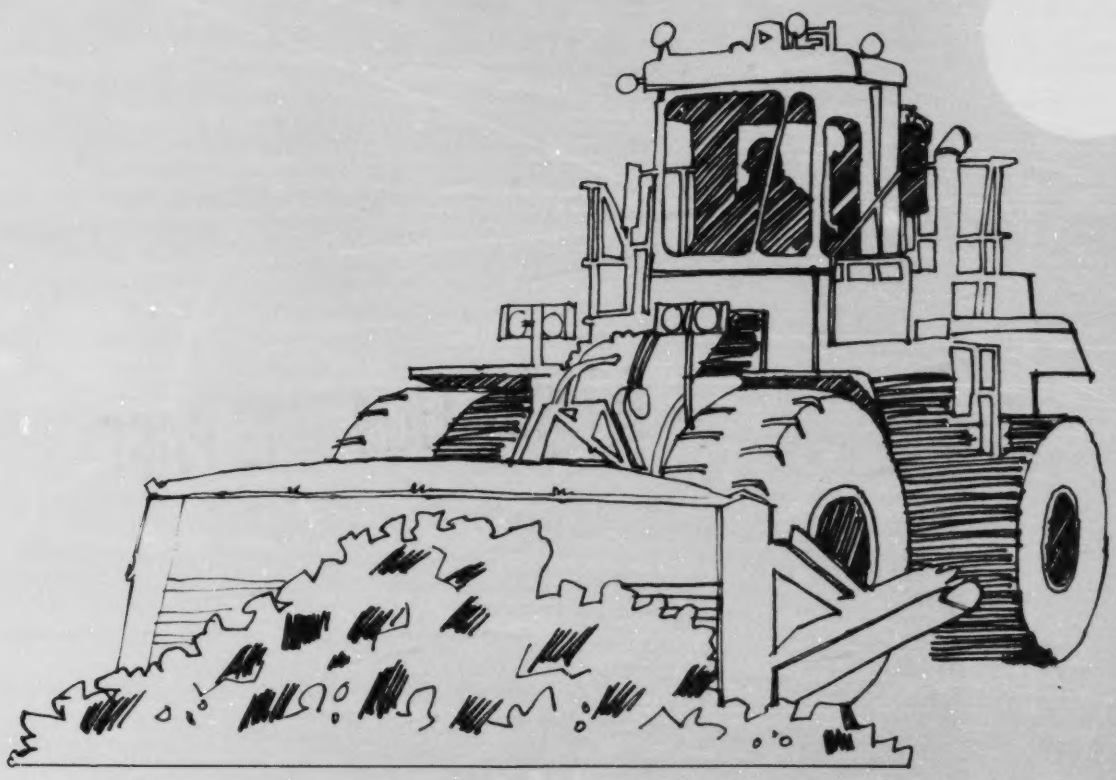
   Dump monitor stakes indicate the amount of settling or movement of a dump. These monitors are extremely important for safety and should be checked regularly.

10. **Road stakes**

    Road stakes mark the center and shoulders of the road surface.

INDICATORS AND CONTROLS

module 3



OBJECTIVE 3-1

The rubber tire dozer operator will locate and identify the indicators controls and switches in the cab area.

KEYPOINTS/PROCEDURES

1. Rubber tire dozer indicators include:
   - Hour meter.
   - Main fault light.
   - Warning buzzer.
   - Coolant temperature indicator.
   - Hydraulic oil temperature indicator.
   - Engine oil pressure indicator.
   - Brake pressure indicator.
   - Parking brake indicator.
   - Transmission oil temperature indicator.
   - Alternator indicator.
   - Fuel level indicator.
   - Hydraulic oil filter indicator.
   - Engine oil filter indicator.
   - Transmission oil filter indicator.
   - Air intake filter indicator.
   - Fuel filter indicator.
2. Rubber tire dozer controls and switches include:
   - Power and start switch.
   - Starting aid button.
   - Panel test switch.
   - Front and rear windshield wiper/washer control knob.
   - Panel lights and running lights switch.
   - Flood lights switch.
   - Auxiliary lights switch.
   - Air conditioning control knob.
   - Heater control knob.
   - Fan control switch.
   - Transmission control lever.
   - Transmission control lock.
   - Park brake control knob.
   - Accelerator.
   - Brake pedal.
   - Blade control lever.

- Blade tilt lever.
- Blade tip lever.
- Steering column latch lever.
- Steering wheel.
- Disconnect switch.
- Horn switch button.

OBJECTIVE 3-2

The rubber tire dozer operator will describe the warning signals and explain the action to take if a signal appears.

KEYPOINTS/PROCEDURES

1. **Hour meter**

   The hour meter indicates the total number of hours the engine has been operating.

2. **Main fault light**

   The fault light flashes if any of the following systems malfunction:

   - Coolant temperature.
   - Hydraulic oil temperature.
   - Engine oil pressure.
   - Brake pressure.
   - Parking brake.
   - Transmission oil temperature.

3. **Warning buzzer**

   The warning buzzer sounds if any of the following systems malfunction:

   - Engine oil pressure.
   - Brake pressure.
   - Parking brake.
   - Transmission oil temperature.

4. **Coolant temperature indicator**

   The coolant temperature indicator is a red light. This light comes on if the engine overheats. At the same time the fault light comes on. Direct the rubber tire dozer immediately to a safe place and park out of the way of other traffic. Shut off the engine and check for the cause of the problem.

   The operator should check:

   - The coolant level — Make sure the coolant level is up. Exercise extreme caution as the coolant is under pressure and if not careful an operator can suffer severe burns.
   - The engine oil level — Make sure the engine oil level is up. Low engine oil level causes the engine to overheat.
   - Look for leaks of both the oil and the engine coolant.

   Caution:

   Never operate the rubber tire dozer if the coolant light is on and the fault light is flashing.

5. **Hydraulic oil temperature indicator**

   The hydraulic oil temperature warning light comes on when there is excessive oil temperature. At the same time, the fault light flashes. If the red light is on, reduce the working load until the light goes out. If the light stays on, direct the rubber tire

dozer to a safe place immediately and park out of the way of other traffic. Shut off the engine and check for the cause of the problem. The operator should check the hydraulic oil level and look for hydraulic leaks.

Caution:

Never operate the rubber tire dozer when the hydraulic oil temperature light is on.

6. **Engine oil pressure indicator**

   The engine oil pressure light indicates low engine oil pressure. When this red light comes on, the warning buzzer sounds and the main fault light flashes. Direct the rubber tire dozer to a safe place immediately and park out of the way of other traffic. Shut off the engine and check for the cause of the problem. The operator should look for a low engine oil level (check the dipstick) or engine oil leaks.

   Caution:

   Never operate the rubber tire dozer if the oil is below the "add" mark of the dipstick or if the oil pressure light is on.

7. **Brake pressure indicator**

   The brake pressure indicator indicates by a red light low air pressure to the brakes. The warning buzzer sounds and the main fault light flashes. Direct the rubber tire dozer immediately to a safe place and park out of the way of other traffic. Shut off the engine and check for the cause of the problem.

   Caution:

   Never operate a rubber tire dozer with a brake problem.

8. **Parking brake indicator**

   The parking brake indicator is a red light that comes on when the park brake is engaged. The main fault light and the warning buzzer also come on. If the red light comes on while the rubber tire dozer is operating, direct the rubber tire dozer immediately to a safe place and park out of the way of other traffic. Shut off the engine and check for the cause of the problem. When starting the rubber tire dozer, the parking brake indicator light and the main fault light are on and the warning buzzer sounds until the parking brakes are released.

9. **Transmission oil temperature indicator**

   The transmission oil temperature indicator is a red light that comes on if there is excessive transmission oil temperature. The main fault light also flashes. Direct the rubber tire dozer immediately to a safe place and park out of the way of other traffic. Shut off the engine and check for the cause of the problem. The operator should check the transmission oil level and look for any oil leaks.

   Caution:

   Never operate the rubber tire dozer if the transmission oil temperature light is on or the main fault light starts flashing.

10. **Alternator indicator**

    The alternator light comes on if there is a problem with the alternator, such as, discharging. If the red light comes on, direct the rubber tire dozer immediately to a safe place and park out of the way of other traffic. Shut off the engine and check for

the cause of the problem. The operator should look for a loose or broken alternator belt and report the condition to the supervisor. Do not operate a rubber tire dozer with a broken or loose alternator belt.

11. **Fuel level indicator**

    The fuel level indicator is a red light that comes on when there is approximately 10 percent of the fuel left in the tank. Once this light comes on, the operator should refuel immediately to ensure that the rubber tire dozer does not completely run out of fuel.

12. **Hydraulic oil filter indicator**

    The hydraulic oil filter indicator is a yellow light that comes on and remains on when the hydraulic oil filter requires changing. Notify the supervisor of the problem.

13. **Engine oil filter indicator**

    The engine oil filter indicator is a yellow light that comes on if the engine oil filter requires servicing. If this light comes on during operation change the oil filter.

14. **Transmission oil filter indicator**

    The transmission oil filter indicator if a yellow light that comes on if the transmission filter requires servicing. If this light comes on during production change the transmission filter.

15. **Air intake filter indicator**

    The air intake filter indicator light comes on if the air filters require changing or servicing. If this yellow light comes on, during operation, service or change the filter.

16. **Fuel filter indicator**

    The fuel filter indicator comes on if the fuel filters are plugged and require servicing. If the yellow light comes on during operation, change the filters.

OBJECTIVE 3-3

The rubber tire dozer operator will describe the function of each of the controls and switches.

KEYPOINTS/PROCEDURES

1. **Power and start switch**

   The power and start switch activates all of the electrical circuits on the rubber tire dozer. In the start position, the engine is started. The switch then returns to the "on" position when released.

2. **Starting aid button**

   The starting aid button helps start the engine during cold weather. The button, when pushed, releases a premeasured amount of ether into the air intake system.

3. **Panel test switch**

   The panel test switch tests all of the indicators to make sure that they are working.

4. **Front and rear windshield wiper/washer control knob**

   The front and rear windshield wiper/washer control knob controls the front and rear windshield wipers and washers.

5. **Panel lights and running lights switch**

   This is a two-stage switch. The first stage controls the panel lights. The second stage of the switch turns on the front and rear running lights.

6. **Flood lights switch**

   The flood lights switch is to activate the flood lights that light up the working area.

7. **Auxiliary lights switch**

   The auxiliary lights switch turns on all additional lighting such as extra flood lights and the rotating beacon.

8. **Air conditioning control knob**

   The air conditioning control knob turns on the air conditioning system.

9. **Heater control knob**

   The heater control knob activates and controls the heat in the cab area.

10. **Fan control switch**

    The fan control switch activates and controls the speed of the fan.

11. **Transmission control lever**

    The transmission control lever controls the direction and gear speed selection.

12. **Transmission control lock**

    The transmission control lock sets the transmission control lever in neutral position.

13. **Park brake control knob**

    The park brake control knob activates or deactivates the park brakes.

14. **Accelerator**

The accelerator controls the engine speed. It is depressed for more speed.

15. **Brake pedal**

The brake pedal is depressed to control the ground speed.

16. **Blade control lever**

The blade control lever controls the position and movement of the blade. It also allows the blade to float and hold in position.

17. **Blade tilt lever**

The blade tilt lever controls the tilting motion of the blade, either right or left and hold. On newer equipment, the same lever controls both blade control and blade tilt.

18. **Blade tip lever**

The blade tip lever controls the blade by rolling the top of the blade forward or backward.

19. **Steering column latch lever**

The steering column latch lever enables the operator to adjust the steering column to the desired height.

20. **Steering wheel**

The steering wheel turns the rubber tire dozer.

21. **Disconnect switch**

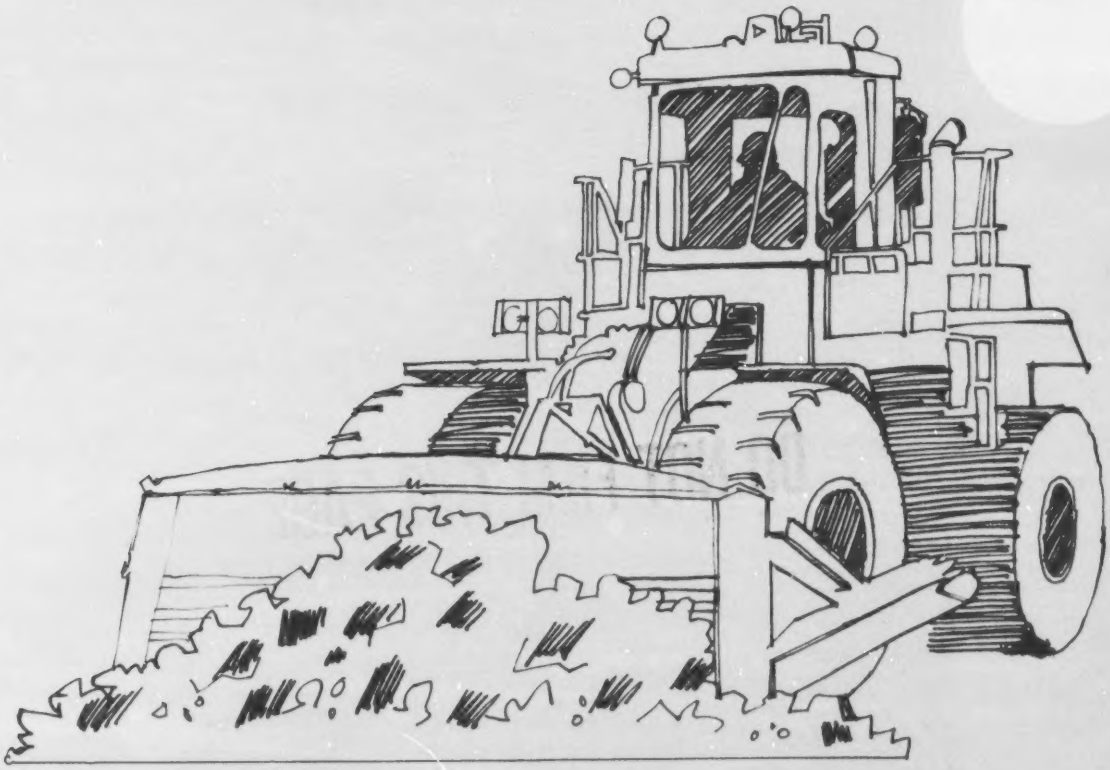
The disconnect switch turns the main power to the electrical systems on or off.

22. **Horn switch button**

The horn switch button is depressed to sound the horn.

PRE-START AND OPERATIONAL CHECKS

module 4



OBJECTIVE 4-1

The rubber tire dozer operator will locate and identify the following basic units and related components on the rubber tire dozer.

KEYPOINTS/PROCEDURES

1. **Main frame**

   The main frame is divided into the front and rear frame. The main frame is the basic unit to which all other units and components are mounted.

2. **Power train**

   The power train unit consists of the:

   - Diesel engine.
   - Torque converter.
   - Transmission.
   - Transfer gear.
   - Rear differential.
   - Front differential.
   - Drive shafts.

3. **Structural components**

   The structural components consist of the platform and the operator's cab.

4. **Engine**

   The engine unit consists of the:

   - Radiator assembly.
   - Air cleaners.
   - Alternator.
   - Turbochargers.
   - Starting motor.

5. **Blade assembly**

   The blade assembly consists of the:

   - Blade.
   - Cutting edges.
   - Corner bits.
   - Hoist cylinder.
   - Tilt cylinder.
   - Dozer stabilizer.

OBJECTIVE 4-2

The rubber tire dozer operator will locate in a systematic sequence, the pre-start and running check points on the rubber tire dozer.

KEYPOINTS/PROCEDURES

1. The rubber tire dozer pre-start and running check points are:
   - Check the cab for warning flags and lockout tags and around the dozer for personnel. Claim the dozer.
   - Blade.
   - Hydraulic cylinders.
   - Dozer stabilizer.
   - Left front tire and wheels.
   - Frame upper and lower pivot bearings.
   - Anti-pivot link.
   - Left rear tire and wheels.
   - Ground under the dozer.
   - Right rear tire and wheels.
   - Hydraulic oil level.
   - Steering cylinders.
   - Ladders and handrails.
   - Air tanks.
   - Front right tire and wheels.
   - Cover and guards (left side).
   - Engine compartment.
   - Engine oil level.
   - Fan belts.
   - Alternator belt.
   - Engine coolant level.
   - Covers and guards (right side).
   - Transmission oil check.
   - Fuel level.
   - Lights.
   - Windows.
   - Fire extinguisher.
   - Indicators.
   - Seat belts.

OBJECTIVE 4-3

The rubber tire dozer operator will perform a pre-start check of the dozer and describe the acceptable conditions for each check point and the problems that should be reported to the supervisor.

KEYPOINTS/PROCEDURES

1. **Check the cab for warning flags and lockout tags and around the dozer for personnel. Claim the dozer.**

   Before commencing the pre-start check, inspect the cab area for other operators, warning flags or lockout tags, or personnel working in the immediate vicinity or under the rubber tire dozer. If unclaimed, claim the dozer to ensure that no one else moves it. To claim the dozer leave a visual indicator such as a lunch bucket to indicate that the dozer is in use.

2. **Blade**

   Check the blade for cracks and the cutting edges and corner bits for wear and loose or missing bolts. Inspect all the pin connections and keepers to ensure that they are secure.

3. **Hydraulic cylinders**

   Check the hoist and tilt cylinders for leaking hydraulic lines and make sure that the ends of the cylinders are not leaking. Check the pins and keepers at each connecting point for excessive wear.

4. **Dozer stabilizer**

   Check the stabilizer for cracks and all connecting points for excessive wear.

5. **Left front tire and wheels**

   Check the left front tire and wheels for:

   - Proper tire inflation.
   - Tire cuts and separations.
   - Valve stem guards, side flanges, lock ring placement and drive lug.
   - Planetary covers.

6. **Frame upper and lower pivot bearings**

   Check the frame pivot bearings for dirt or debris build up and loose or missing bearing caps, which must be tightened or replaced immediately.

7. **Anti-pivot link**

   Make sure the anti-pivot link is in the carrying position.

8. **Left rear tire and wheels**

   Check the left rear tire and wheel lugs for:

   - Proper tire inflation.
   - Tire cuts and separations.
   - Valve stem guards, side flanges, lock ring placement and drive lug.
   - Planetary covers.

9. **Ground under the dozer**

   Check the ground directly under the dozer for coolant, hydraulic transmission or engine leaks.

10. **Right rear tire and wheels**

    Check the right rear tire and wheel lugs for:

    - Proper tire inflation.
    - Tire cuts and separations.
    - Valve stem guards, side flanges, lock ring placement and drive lug.
    - Planetary covers.

11. **Hydraulic oil level**

    The blade should be on the ground before testing the sightglass. Check the sightglass on the hydraulic tank for the hydraulic oil level. If the rubber tire dozer has been operating and is hot, the sightglass should be full. If the rubber tire dozer is cool, the sightglass should be 3/4 full. The sightglass should be at least 3/4 full when running hot. If it is below that level, have the dozer serviced. The temperature of the hydraulic oil can be checked by placing a hand against the hydraulic tank.

    Caution:

    Hydraulic oil tanks are pressurized. Use caution when opening the filler cap.

12. **Steering cylinders**

    Check the steering cylinders for hydraulic leaks and look for wear on the connecting pins. Make sure all the bolts at the end of the cylinder are tight and that none are missing. Check the welds on the trunions for cracks.

13. **Ladders and handrails**

    Check the ladders and handrails to ensure that they are secure and in good condition. Report any condition that needs repair to the supervisor.

14. **Air tanks**

    Drain the air tanks of all moisture daily and twice per day during the winter months (once at the beginning of the shift and then at lunch break).

15. **Right front tire and wheels**

    Check the right front tire and wheels for:

    - Proper tire inflation.
    - Tire cuts and separations.
    - Valve stem guards, side flanges, lock ring placement and drive lug.
    - Planetary covers.

16. **Cover and guards (left side)**

    Check the cover and guards on the left side of the engine compartment for damage and loose or missing bolts.

17. **Engine compartment**

    Check the engine compartment for engine oil or fuel leaks. Also, check the radiator and hoses for coolant leaks.

18. **Engine oil level**

Check the engine oil level at the beginning of each shift. During this check the rubber tire dozer should be on as level an area as possible. The engine oil level is checked with the engine running. If the oil level is on the "add" mark, have the machine serviced before going into production. There is both a "stop" and a "running" side to the dipstick. When the engine is stopped, the oil level is higher than when it is running. It is important to read the proper side of the dipstick.

19. **Fan belts**

Check that the fan belts are in good condition and tight.

20. **Alternator belt**

Check that the alternator belt is in good condition and tight.

21. **Engine coolant level**

To check the coolant level when the engine is cool, simply unscrew the radiator cap and be sure that the coolant is approximately 1/2" below the baffle plate. If the rubber tire dozer engine is hot do not physically check the coolant level. Check the dash indicator light to make sure it is not on.

22. **Cover and guards (right side)**

Check the cover and guards on the right side of the engine compartment. Look for damage and loose or missing bolts.

23. **Transmission oil check**

The engine should be running at low idle to get a proper reading. The transmission oil level is checked with a dipstick to ensure that there is sufficient oil in the system. If the oil is below the "full" mark, have it topped up.

24. **Fuel level**

The fuel level is checked by using the dipstick in the filler neck which reads in percentages of fuel remaining. If the fuel level falls below 10 percent, the indicator light comes on and the dozer should be refuelled immediately.

25. **Lights**

Check that all lights are clean, free of damage, and adjusted properly. Replace any damaged lights immediately. Do not operate the dozer if vision is restricted.

26. **Windows**

Check that all windows are clean and free of damage. Report any damaged windows to the supervisor. Do not operate the dozer if vision is restricted.

27. **Fire extinguisher**

Check that there is a fire extinguisher on the rubber tire dozer. Be sure that the seal is not broken and that the gauge reads full. If the extinguisher is missing or has been used have it replaced immediately.

28. **Indicators**

Check all of the indicators in the cab area. The rubber tire dozer is equipped with a panel test switch which the operator presses downward while the engine is running, to make the check. All of the lights come on and the horn sounds.

29. Seat belts

Check that the seat belts are in good condition and properly anchored. Operators on dozers are to use seat belts at all times. Rule 277 (c) of the *Mines Regulation Act* Section 23, states:

> Lap seat belts of an approved type shall be installed in all mobile equipment fitted with a roll-over protective structure, and it shall be the duty of the operators of such equipment to wear the seat belts at all times.

OBJECTIVE 4-4

The rubber tire dozer operator will perform proper engine start up and shut down procedures.

KEYPOINTS/PROCEDURES

1. **Start up**

   Follow these procedures to start the engine:

   a. Check for personnel in the immediate vicinity of the rubber tire dozer.

   b. Turn on the disconnect switch.

   c. Apply the parking brake by pulling up the park brake control knob.

   d. Place the transmission control lever in neutral.

   e. Engage the transmission control lock.

   f. Place the hydraulic controls in the hold position.

   g. Press down on the accelerator pedal so that it goes past the detent position.

   h. Sound the horn.

   i. Turn the starter key and crank the engine over until it starts. Once the engine has started, release the key.

   j. Check all of the indicators.

   This procedure is for an air temperature of above 60°F or 16°C.

2. **Shut down**

   Follow these procedures to shut down the engine:

   a. Park the dozer on a level and safe area.

   b. Apply the foot brake and engage the parking brake control.

   c. Lower the blade to the ground and put the hydraulic control in the hold position.

   d. Move the transmission control lever to the neutral position.

   e. Engage the transmission lever lock.

   f. Let the engine cool down for at least five minutes.

   g. Turn the starter key off to stop the engine (remove the key if directed).

   h. Turn the disconnect key off.

   i. Check to see if there is residual hydraulic pressure trapped in the dozer. If there is, the operator should bleed the pressure off by applying pressure to the lift blade. Once this is done the steering will not move. Also, pump the brakes, to eliminate brake accumulator pressure. Once the pressure drops the park brake will automatically come on and stay on.

OBJECTIVE 4-5

The rubber tire dozer operator will perform operational checks on the brakes, steering and hydraulic controls prior to putting the rubber tire dozer into production. The operator will also describe the acceptable conditions for each check and the problems that should be reported to the supervisor.

KEYPOINTS/PROCEDURES

1. **Brakes**

   To check the brakes on a rubber tire dozer, the operator must:

   a. Put the rubber tire dozer transmission into first and move forward at low speed.

   b. Apply the service brakes hard and the rubber tire dozer should stop immediately. If the brakes do not hold, report the condition to the supervisor and have the brakes corrected before putting the dozer into production.

2. **Steering**

   To check the steering, the operator must put the rubber tire dozer into the lowest operating range and move at slow speed. Turn the steering wheel in both directions to check that the dozer is responding correctly. If any problems arise, do not operate the dozer until the steering is corrected.

3. **Hydraulic controls**

   To determine the response of the hydraulic controls for the blade the operator should check:

   - The raise and lower function of the blade.
   - The tilt control — tilt the blade from side to side.
   - The tip control which rolls or tips the top of the blade forward or backward.

   If any of the responses are not correct, have them serviced. Never drop the blade to the ground.

OBJECTIVE 4-6

The rubber tire dozer operator will describe the proper procedures for a cold weather start of the dozer engine.

KEYPOINTS/PROCEDURES

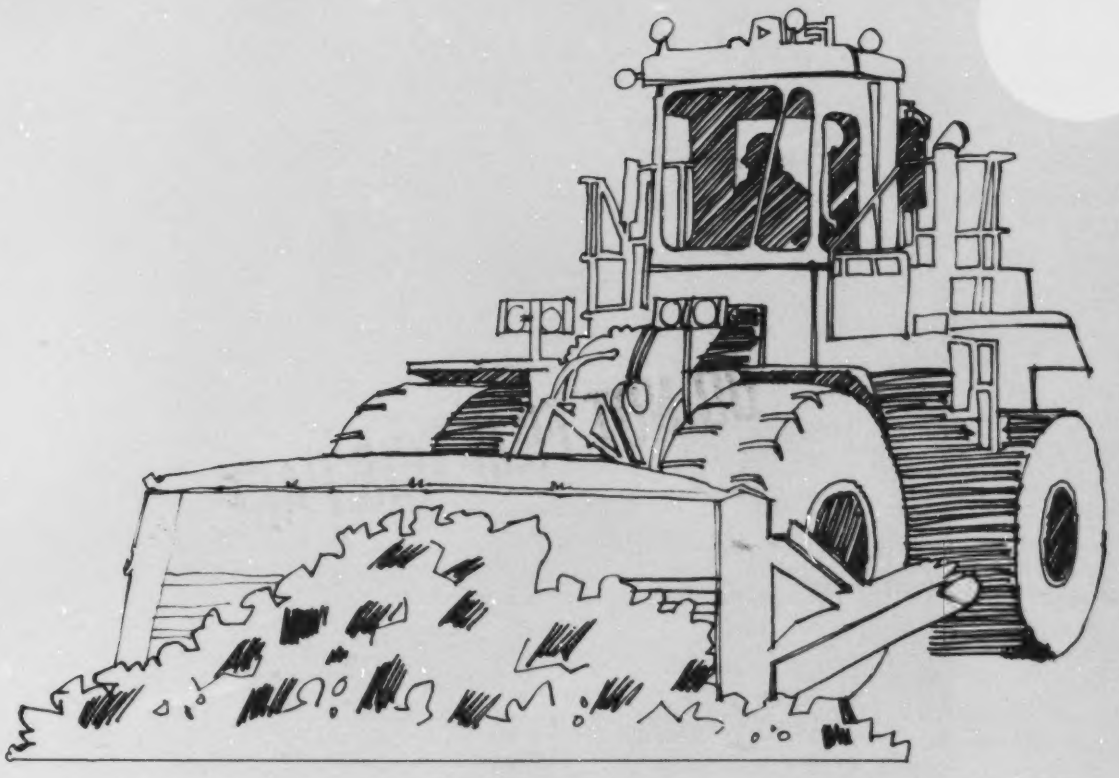
1. Start up procedures are given in OBJECTIVE 4-4.
2. Follow these procedures for cold weather starting:
   a. Once the cranking or starting of the engine begins, push the starting fluid control button. Repeat every couple of seconds until the engine starts. Keep pushing the starter fluid control button every couple of seconds until the engine is running smoothly.
   b. If the engine has been cranked over by the starter for more than half a minute, let the starter cool off before starting to crank again.

Caution:

Do not use excessive starting fluid once the engine is running smoothly. If the engine is warm never use starting fluid. Some rubber tire dozers are equipped with an automatic solenoid. When the engine temperature reaches a certain level, the solenoid automatically eliminates the chance of using starting fluid.

BASIC OPERATION

module 5



OBJECTIVE 5-1

The rubber tire dozer operator will demonstrate moving the rubber tire dozer forward in normal operating conditions and slowly in close quarters.

KEYPOINTS/PROCEDURES

1. **Normal forward motion**

   Follow these procedures to move the dozer forward:

   a. Before moving the rubber tire dozer, check for personnel and other equipment around the immediate vicinity of the dozer.

   b. Start the engine and check all indicators, making sure that everything is functioning properly. Start up procedures are given in OBJECTIVE 4-4.

   c. Adjust and fasten the seat belt.

   d. Place one foot on the service brake pedal and push down to hold the rubber tire dozer stationary.

   e. Using the blade control lever, lift the blade approximately a foot and a half off of the ground.

   f. Release the park brake.

   g. Release the transmission control lock.

   h. Move the transmission control lever to the forward position. Rotate the transmission control lever to the desired operating range. For basic forward movement use the lowest range.

   i. Lift the foot off of the service pedal, releasing the brakes.

   j. Push down on the accelerator pedal gently and the rubber tire dozer will move slowly forward.

   k. To change operating ranges while going forward, release the accelerator pedal and the engine rpm will drop. Rotate the transmission control lever to the speed desired. It may be necessary to apply the brakes prior to downshifting.

2. **Slow movement**

   For slow movement put the rubber tire dozer into the lowest operating range on the transmission. The dozer speed is governed by the accelerator pedal.

OBJECTIVE 5-2

The rubber tire dozer operator will demonstrate moving the rubber tire dozer in reverse, including reversing the dozer during production.

KEYPOINTS/PROCEDURES

1. **Normal reverse motion**

   Follow these procedures to reverse the dozer:

   a. Before moving the rubber tire dozer, check the immediate vicinity for other personnel and equipment.

   b. Start the engine and check all indicators, making sure that everything is functioning properly. Start up procedures are given in OBJECTIVE 4-4.

   c. Adjust and fasten the seat belt.

   d. Place one foot on the service brake pedal and push down to hold the rubber tire dozer stationary.

   e. Using the blade control lever lift the blade approximately a foot and a half off of the ground.

   f. Release the park brake.

   g. Release the transmission control lock.

   h. Move the transmission control lever into reverse. Rotate the transmission control lever to the desired operating range. For basic reverse movement use the lowest range.

   i. Lift the foot off of the service pedal, releasing the brakes.

   j. Push down on the accelerator pedal gently and the rubber tire dozer will move slowly forward.

   k. To change operating ranges while going in reverse, release the accelerator pedal and the engine rpm will drop. Rotate the transmission control lever to the speed desired. It may be necessary to apply the brakes prior to downshifting.

2. **Slow movement**

   For slow movement put the rubber tire dozer into the lowest operating range on the transmission. The dozer speed is governed by the accelerator pedal.

OBJECTIVE 5-3

The rubber tire dozer operator will demonstrate the proper techniques for changing the direction of the dozer.

KEYPOINTS/PROCEDURES

1. In production where the rubber tire dozer is changing directions constantly, from forward to reverse and vice-versa, the operator must complete the following steps before making a directional change:
   a. Lift the foot off of the accelerator pedal, reducing the engine speed.
   b. Apply the service brake, stopping the rubber tire dozer.
   c. Move the transmission control lever into reverse and rotate the control to the desired operating range.
   d. Press down gently on the accelerator for a smooth motion into reverse travel.

   These procedures are used for either direction.

OBJECTIVE 5-4

The rubber tire dozer operator, using proper steering procedures will demonstrate turning the dozer in both directions.

KEYPOINTS/PROCEDURES

1. When making tight turns in either direction, the speed must be kept to a minimum. Tight turns at excessive speeds cause unwanted and costly tire damage.

OBJECTIVE 5-5

The rubber tire dozer operator will demonstrate the proper techniques to stop and park the rubber tire dozer.

KEYPOINTS/PROCEDURES

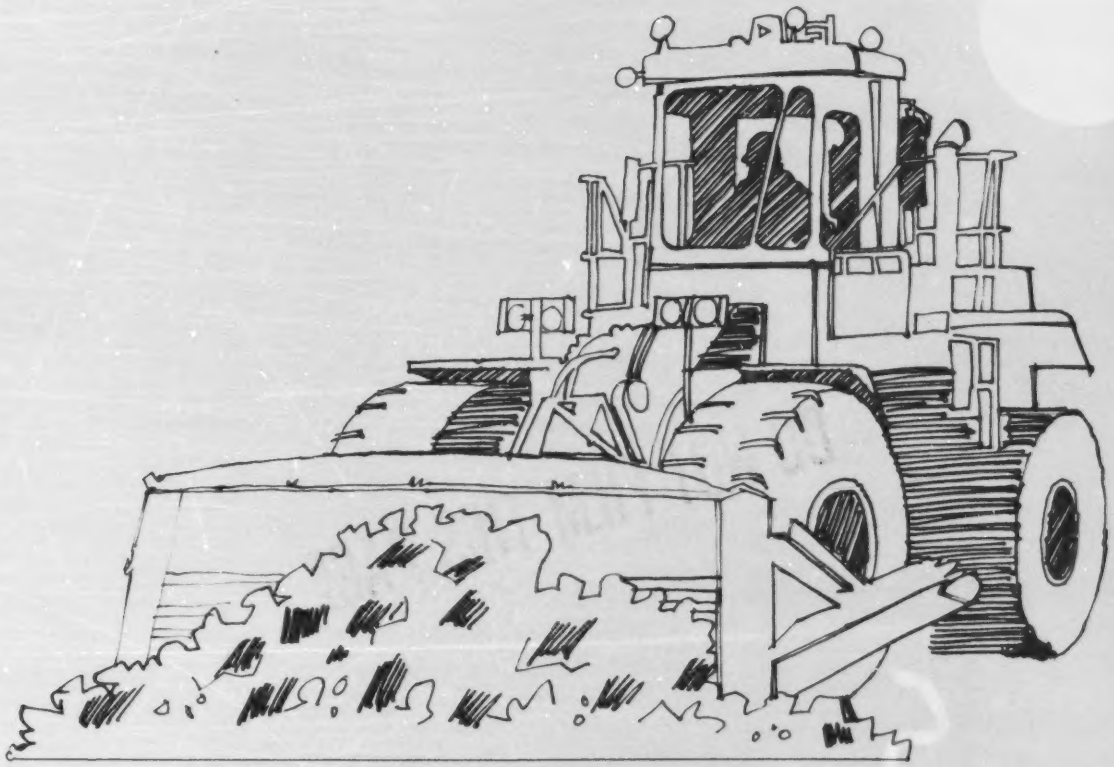
1. To stop and park the rubber tire dozer the operator should:
   a. Find a level and safe area to park.
   b. Reduce the engine speed to an idle by lifting the foot off of the accelerator pedal.
   c. Press down on the service brake pedal gently and bring the rubber tire dozer to a smooth stop. Continue with firm pressure on the service brake pedal to hold the rubber tire dozer steady.
   d. Move the transmission control lever to neutral.
   e. Engage the transmission control lever lock.
   f. Activate the park brakes.
   g. Lower all of the hydraulic equipment to the ground and apply slight pressure.
   h. Perform shut down procedure if necessary. Shut down procedures are given in OBJECTIVE 4-4.

Caution:

When assisting a mechanic or working around the rubber tire dozer, make sure the safety link is in place to avoid articulation. Lock the safety link or bar.

RUBBER TIRE DOZER PRODUCTION OPERATION

module 6



OBJECTIVE 6-1

The rubber tire dozer operator will clean spill rock to prevent tire damage to rubber tire equipment.

KEYPOINTS/PROCEDURES

1. **Road hazards**

   The rubber tire dozer operator must constantly be alert to spill rock off of trucks, metal objects and pot holes. The operator should push any foreign material off of the road while travelling. Also repair the pot holes by digging and replacing the material.

2. **Work face area**

   In the work face area, the rubber tire dozer operator should be alert to spill rock from haulage trucks and shovel buckets. This loose material must be pushed back into the face for the shovel to load out.

3. **Dumps**

   Loose material left on dumps can be pushed over the edge or to the side so that haulage trucks do not travel over it.

OBJECTIVE 6-2

The rubber tire dozer operator will demonstrate proper dozing.

KEYPOINTS/PROCEDURES

1. Follow these procedures for dozing:
   a. Evaluate the job before commencing work. The operator should know if there are any people or equipment in the direction of the dozing, the type of material to be pushed, and the amount of material to be moved.
   b. Begin all jobs from as level an area as possible.
   c. With the rubber tire dozer moving ahead, slowly lower the blade into the ground, until the desired depth is established. The material being cut will build up in front of the blade and travel along with the dozer.
   d. Approximately 6 inches of the hydraulic ram should be showing, when tilting the blade forward. This will keep the blade running on the cutting edges and not on the sideboard. The skid shoe should be flat on the ground during a push.
   e. If the blade cuts too deeply into the ground during the push and causes the rear of the rubber tire dozer to rise, back the dozer up, and start another cut.
   f. When pushing a heavy load the speed of the dozer will drop. The operator must raise the blade slightly, cutting down on the resistance and allowing the dozer speed to regulate itself.
   g. A pumping action on the blade control can be used. This pumping action raises and lowers the blade rapidly and keeps the dozer pushing at an even speed.
   h. Whenever possible, cut and move the material downgrade, which is easier and more efficient.
2. The operator should use the lowest operating range when dozing and govern the speed with the accelerator.
3. The 824C, because it has a blade, is classed as a Cat and often tire wear is forgotten about. The operator must pay attention to tire wear and never spin the tires during production. Tires showing chunks out of the tread could indicate a lead-footed operator.

OBJECTIVE 6-3

The rubber tire dozer operator will demonstrate the proper techniques for levelling piles of material with the dozer.

KEYPOINTS/PROCEDURES

1. The operator must choose a method of approach when levelling a pile of material. The operator can approach from the side or cut the top off of the pile. Choose the method that will make the task safe and efficient for the operator and the dozer. Normally the approach is from the side.
2. Follow these procedures to push a pile of material from the side:
   a. Approach the pile from the most desirable side.
   b. Set the blade at the level the material is to be spread.
   c. Take a cut of about one-third the blade width depending on the material.
   d. Choose the direction of the side cut based on the size of the area the material is to be spread over.
   e. Watch for large rocks that might roll over the side arm of the dozer, causing broken valve stems and side flanges or deflation of the tires.
3. Follow these procedures to control high faces:
   a. Should a high face form at the side of the pile during the process of levelling, the operator should start the push or cut and while travelling forward, turn the rubber tire dozer into the face gradually. At the same time raise the blade. This action cuts down the face.
   b. Then back up the rubber tire dozer to the point where it first turned into the face.
   c. Set the blade at the desired level and continue with a normal push.
4. Follow these procedures to cut the top off of the pile:
   a. In some instances, there can be difficulty in reaching the top of the pile with the rubber tire dozer. Construct a small ramp by running the rubber tire dozer part way up the pile and backblading some of the material down. The operator can now access the top of the pile and begin pushing.
   b. A slot is formed through the middle of the pile. The slot should be kept wider than the blade. Once the rubber tire dozer has cut down the center of the pile to the desired level, two piles will remain, one on either side.
   c. The operator can now revert to the side method to complete the job of levelling.

Caution:

Pay close attention to the high faces on either side of the rubber tire dozer. High faces can become a hazard to the operator and the dozer if neglected.

OBJECTIVE 6-4

The rubber tire dozer operator will demonstrate the proper method of spreading material with the dozer.

KEYPOINTS/PROCEDURES

1. Follow these procedures to spread material:
   a. Evaluate the job before commencing work. Observe the area the material is to be spread over. Note the coarseness of the material, the amount of material, and the thickness of the material that is to be spread.
   b. With the rubber tire dozer in forward motion, enter the pile with the blade at the desired height.
   c. As the rubber tire dozer moves forward, pushing the material, the material will flow under the blade, leaving behind the required spread of material.
   d. If the spread requires a specific thickness, the operator should allow for compaction. Some material can require double the thickness in spreading, in order to allow for loss during compaction. Various types of material compact differently. Through experience and trial and error the operator will learn to judge the ratio of spread/compaction to achieve the desired depth of spread.
   e. A full blade is easier to handle than a partially loaded blade, when doing finishing or levelling work.
2. Adjust the skid shoe and cutting edge to make contact with the ground at the same time to aid in maintaining a level grade.

OBJECTIVE 6-5

The rubber tire dozer operator will demonstrate the proper techniques for transporting material with the dozer.

KEYPOINTS/PROCEDURES

1. Follow these procedures to transport material:
   a. Once the blade is full of material, maintain the blade at surface level, cutting slightly. This action ensures that the blade will remain full throughout the push.
   b. Excess material will roll off the sides of the blade during the push, forming a trough or channel. The operator can use the same trough or channel on the second push to hold material onto the blade. Downshift or raise the blade slightly if the load slows the dozer down.
2. Transporting coarse material with the rubber tire dozer is more difficult. The dozer will labour when it comes up against large rocks lodged deeply into the ground. The operator can either dig out the embedded obstruction or go around it.
3. Slot dozing is a method that allows the rubber tire dozer to transport the maximum amount of material. Once the slot is formed, the sides of the slot will hold the material onto the blade and allow larger loads to be carried. Slot dozing is an excellent method for high production dozing.

   Caution:

   Use extreme caution when high faces form on the sides of the slot. High faces are dangerous to the operator and dozer.
4. Only a slight turn is possible when the blade is full of material. If a change of direction is required, reposition the dozer and continue pushing in a straight line.

OBJECTIVE 6-6

The rubber tire dozer operator will demonstrate the proper techniques for stockpiling material with a dozer.

KEYPOINTS/PROCEDURES

1. Follow these procedures to stockpile material:
   a. Select the stockpile site. In a restricted area the stockpile is high; in an unrestricted area the stockpile is spread out and larger in area.
   b. Start pushing the material until a ramp is established. Material can then be pushed over the edges, either at the end of the ramp or off of the sides and developed into a stockpile.

Caution:

Use extreme caution when working on dump edges.

OBJECTIVE 6-7

The rubber tire dozer operator will demonstrate proper ditching techniques.

KEYPOINTS/PROCEDURES

1. Follow these procedures for shallow tilt ditiching:
   a. Tilt the blade or lower the desired corner of the blade.
   b. With the dozer in forward motion, lower the corner bit into the ground at the desired depth of cut. This will be the center of the ditch.
   c. Remove enough material to leave a smooth path for the tires.
   d. Once the ditch has been completed, spread the windrow.
2. Follow the same procedures for cleaning an existing ditch.

OBJECTIVE 6-8

The rubber tire dozer operator will demonstrate the proper techniques for developing sidehill cuts with the dozer.

KEYPOINTS/PROCEDURES

1. Follow these procedures for developing sidehill cuts:
   a. Establish a level starting point by tilting the blade down on the uphill side of the cut.
   b. Cut the bench wide enough for the rubber tire dozer to work on.
   c. Move the material from the solid area to the outside edge, forming a shelf or sidehill cut.
   d. Push the material over the edge to widen the shelf or cut, enabling the dozer to continue operating on level ground and to provide a solid and wide working area. Keep the rubber tire dozer tires on as solid material as possible.
   e. Repeat this procedure until the sidehill cut is completed.
2. Sidehill cuts are normally performed by track dozers.

OBJECTIVE 6-9

The rubber tire dozer operator will demonstrate the proper techniques for cleaning the shovel area with the dozer.

KEYPOINTS/PROCEDURES

1. Follow these procedures to clean the loading area:
   a. Make sure that the truck operators, shovel operators and ground personnel are aware of the rubber tire dozer's presence in the working area before starting work. If radio contact cannot be made, enter the area on the cab side of the shovel, making visual contact with the shovel operator.
   b. Follow the basic dozing procedures.
   c. With the rubber tire dozer in forward and the blade contacting the ground, push all of the spill rock back into the face area. Leave the material so that the shovel operator can reach it and load it out. Do not push material into the path of the tracks of the shovel.
   d. The rubber tire dozer operator can assist in maintaining proper grades by either cutting or filling in at the shovel area.

Caution:

Never enter the shovel counterweight swing radius. Also be aware that the operator can still be within the bucket swing radius.

When pushing up a bank, be careful not to climb up the bank so far that the back end of the machine drags. This damages the bumpers and causes a problem in stability.

OBJECTIVE 6-10

The rubber tire dozer operator will demonstrate the procedures for cleaning up flyrock after a blast.

KEYPOINTS/PROCEDURES

1. Cleaning up after a blast is a primary dozing operation. The rubber tire dozer operator must remove flyrock that has landed on the haul roads and within the shovel working area. In the shovel working area, the flyrock is pushed into the working face; on the haul roads, the flyrock is pushed off of the road.
2. Push the flyrock with the rubber tire dozer in forward motion and the blade just touching the ground surface.
3. Flyrock can be used to fill and level holes in the working area.
4. The same procedure is used to clear road spill from haulage trucks in the working area or on haul roads. Push the material off of the road.

OBJECTIVE 6-11

The rubber tire dozer operator will demonstrate the proper techniques for rebuilding the dump and constructing a safety berm.

KEYPOINTS/PROCEDURES

1. Follow these procedures for rebuilding the dump and constructing a safety berm:
   a. Inspect the general condition of the dump. Look for cracks and especially for sagging or movement. Determine how far back from the edge that the dump is stable. Contact the supervisor if there is any doubt, to decide from what point to rebuild the dump.
   b. Select suitable material to rebuild the dump.
   c. Dump a row of loads across the width of the dump at the designated point. Levelling the loads is a basic dozing procedure. Start from the right side of the dump and work to the left whenever possible. It is important that the rubber tire dozer works in full view of a truck that is dumping.
   d. Continue dumping loads and spreading them until the edge of the dump is near. Keep a slight incline from the inside of the dump to the outside edge.
   e. Construct the safety berm on the last row of loads at the outside edge of the dump. The safety berm should be at least three feet in height and be thick enough to prevent a haulage truck from going over the edge. Also, the material should be stable, not snow or mud.
   f. The safety berm should taper towards the top. The tapering is accomplished by lifting the blade and moving slowly forward. Excess material is pushed over the edge in the same motion.

Caution:

The construction of a safety berm is very important. An unsafe berm could cost the life of a truck operator.

OBJECTIVE 6-12

The rubber tire dozer operator will demonstrate the proper techniques for repairing roads with the dozer.

KEYPOINTS/PROCEDURES

1. **Soft spots and potholes**

   Follow these procedures for repairing soft spots and potholes:

   a. Push out soft spots or punched out areas. Make sure to remove all soft material.

   b. Dump the load on the edge of the dug out area. The material is then spread by the rubber tire dozer. Coarse material should be separated and pushed to the side.

2. **Small dips**

   Follow these procedures for repairing small dips:

   a. Have the required loads hauled into the area and dumped at the edge of the dip.

   b. Spread the dumped material. Separate all coarse material and push it to the side.

3. **Sharp rocks**

   Sharp rocks protruding above the road surface are tire hazards and must be removed. The rocks can be dislodged using the corner bit of the blade. Follow these procedures for removing sharp rocks:

   a. Tilt the blade to the desired side.

   b. Dig the material away from around the rock.

   c. Try and hook the corner bit under the rock and push. As the rubber tire dozer is pushing, slowly raise the blade and the rock should roll out.

   d. Haul in some material to fill the hole that is left by the removal of the rock. Dump the load at the edge of the hole.

   e. Spread the material and level it off.

   f. Push any extra material to the side or over the edge of the road.

4. **Water ditches**

   Water ditches are a part of road maintenance. The rubber tire dozer operator must re-ditch these areas. Ditching techniques are given in OBJECTIVE 6-7.

5. **Re-surfacing roads**

   The re-surfacing of roads is a basic dozing and spreading function. The material used is primarily gravel. Levelling techniques are given in OBJECTIVE 6-3. Spreading techniques are given in OBJECTIVE 6-4.

6. **Road safety berms**

   Follow these procedures for maintaining or constructing road safety berms:

   a. Select suitable material for the berms. Do not use mud or snow as they are unstable.

   b. Dump a row of loads along the edge of the road.

   c. The safety berm should be finished off by the rubber tire dozer. Push at right angles to the berm.

d. The berm should be high and thick enough to hold any haulage truck from going over the side.

e. Taper the berm by lifting the blade and slowly moving forward at the same time. The berm will have a finished look. The extra material is pushed over the side of the berm.

OBJECTIVE 6-13

The rubber tire dozer operator will demonstrate the proper procedures for moving cable stands and boats with the dozer.

KEYPOINTS/PROCEDURES

1. When moving cable stands with the rubber tire dozer, always push against the base which is usually a rubber tire filled with concrete. Do not rest the blade on top of the base and push against the steel pipe which holds the pole. Never bang the base to get it moving. Push the standard at a slow and even speed.

   Caution:

   Use extreme caution when moving cable stands. Make sure all personnel are away from the stand before moving.

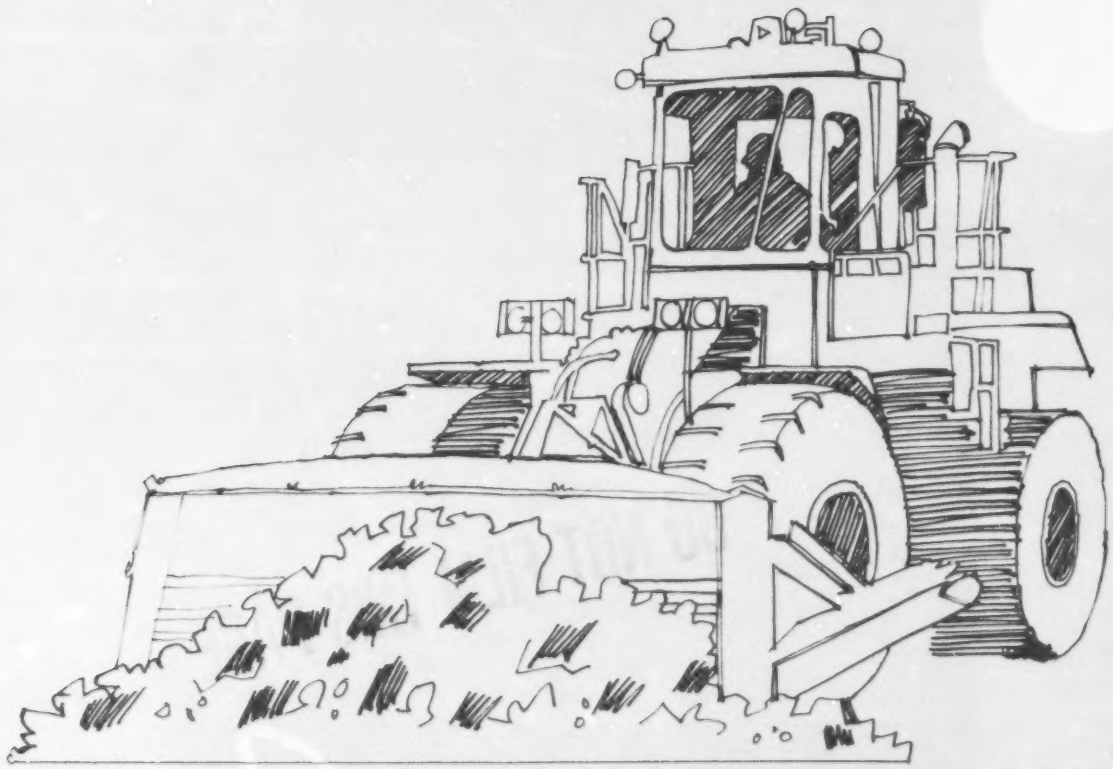
2. Cable boats should be dragged behind the rubber tire dozer, not pushed. When hooking up the boat to the dozer make sure that it is securely fastened. Movement should be at a slow and even speed. Use a ground man whenever possible.

   Caution:

   Cable boats swing from side to side when being pulled. Use extreme caution when working around them. Follow safety clearance standards when moving stands and boats under overhead power lines and power cables.

SERVICE AND REFUEL

module 7



OBJECTIVE 7-1

The rubber tire dozer operator will demonstrate how to safely enter the lube and oil house area and explain all precautions to take.

KEYPOINTS/PROCEDURES

1. The rubber tire dozer operator, when entering the lube and oil house area, must put the transmission into the lowest operating range. Use extreme caution when entering there may be slippery conditions when braking and also other pieces of equipment and personnel moving around the area. The key to safety in the lube and oil house area is the use of low speeds.
2. When the rubber tire dozer is being serviced, the operator must climb down to the ground. Use the ladder and handrails when climbing down. Never jump off of a dozer. Before leaving the cab, the operator must follow the parking procedures given in OBJECTIVE 5-5.

OBJECTIVE 7-2

The rubber tire dozer operator will demonstrate the procedures for having the rubber tire dozer refuelled by a fuel truck and explain all precautions to take.

KEYPOINTS/PROCEDURES

1. The operator must follow company procedures for refuelling in the field.
2. Follow these procedures for refuelling a rubber tire dozer:
   a. Before refuelling occurs both the dozer and fuel truck operators must be aware of each other's presence.
   b. After being spotted by the fuel truck driver, the rubber tire dozer operator should, if directed, perform the standard parking and shut down procedures, as given in OBJECTIVE 4-4.
   c. The operator must get out of the cab and stay on the ground during the refuelling operation.
   d. After refuelling and servicing and before starting up, the operator must walk around the rubber tire dozer to make sure that no one is in the area.
3. While the dozer is being serviced in the pit, the operator must be aware of other pieces of equipment and personnel in the area.

Caution:

If there is work to be done in the articulating area of the rubber tire dozer, connect the frames with the anti-pivot link before servicing the center area. This is very important.

OBJECTIVE 7-3

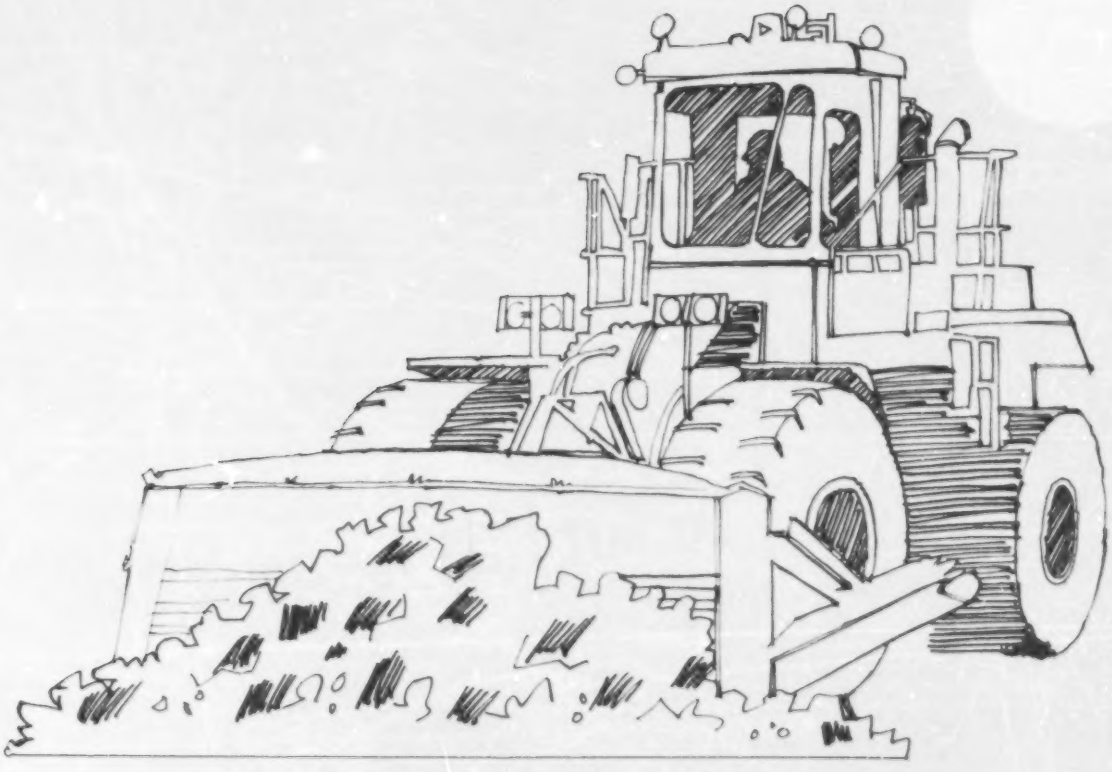
The rubber tire dozer operator will demonstrate the practices of good housekeeping on the dozer and in the fuel and service areas, both in and out of the pit.

KEYPOINTS/PROCEDURES

1. The grader operator should follow these good housekeeping practices while on the rubber tire dozer:
   - Clean all of the windows.
   - Remove all rags, paper and dirt from the cab.
   - Do not store any aerosol cans in the cab because there is the danger of an explosion.
   - Keep all handrails and ladders free of grease. Grease can cause slips and falls.
   - The cab floor must be kept clean at all times to prevent foreign objects from interferring with the control pedals.
2. Continually clean up old rags, and paper, etc. The refuel site usually changes with the pit situation.
3. Good housekeeping in the pit is just as important as in the service areas. Be aware of old rags and papers on the ground and pick them up and dispose of them properly during the refuelling operation.
4. The operator should clean up the service area while the rubber tire dozer is being serviced. For example:
   - Pick up all oily rags, paper, etc. and put them into a barrel for disposal.
   - Clean up oil spills on the floor as soon as possible. Eliminate all possible hazards that can cause slips and falls.

SPECIAL ASSIGNMENTS

module 8



Province of
British Columbia

OPEN PIT MINING JO
RUBBER TIRE DO
SKILL PROF

BASIC SAFETY AND OPERATING RULES	EXPLAIN THE IMPORTANCE OF SAFETY AND OPERATING RULES	EXPLAIN THE IMPORTANCE OF REPORTING ACCIDENTS AND INJURIES	EXPLAIN THE IMPORTANCE OF STAYING ALERT TO CHANGING CONDITIONS	EXPLAIN THE COMPANY TRAFFIC CONTROL SCHEME	EXPLAIN NORMAL BRAKING TECHNIQUES	
	EXPLAIN THE COMPANY'S LOCK-OUT PROCEDURES					
COMMUNICATIONS	SEND AND RECEIVE SIGNALS	FILL OUT REPORT FORMS	OPERATE THE MOBILE RADIO	READ SURVEY STAKES		
INDICATORS AND CONTROLS	LOCATE AND IDENTIFY THE INDICATORS AND CONTROLS	DESCRIBE THE INDICATOR WARNING SIGNALS AND EXPLAIN THE ACTION TO TAKE	DESCRIBE THE FUNCTION OF EACH CONTROL AND SWITCH			
PRE-START AND OPERATIONAL CHECKS	LOCATE AND IDENTIFY THE BASIC UNITS AND RELATED COMPONENTS	LOCATE IN SEQUENCE THE PRE-START AND OPERATIONAL CHECK POINTS	PERFORM A PRE-START CHECK	PERFORM THE ENGINE START UP AND SHUT DOWN PROCEDURES	PERFORM OPERATIONAL CHECKS	THE A IOP
BASIC OPERATION	MOVE THE RUBBER TIRE DOZER FORWARD	REVERSE THE RUBBER TIRE DOZER	CHANGE THE DIRECTION OF TRAVEL	STEER THE RUBBER TIRE DOZER	STOP AND PARK THE RUBBER TIRE DOZER	
RUBBER TIRE DOZER PRODUCTION OPERATION	CLEAN SPILL ROCK	PERFORM DOZING	LEVEL PILES OF MATERIAL	SPREAD MATERIAL	TRANSPORT MATERIAL	
	MOVE CABLE STANDS AND BOATS					
SERVICE AND REFUEL	ENTER THE LUBE AND OIL HOUSE AREA	REFUEL THE DOZER	PRACTISE GOOD HOUSEKEEPING			
SPECIAL ASSIGNMENTS						

IOB TRAINING SERIES
DOZER OPERATOR
OFILE CHART

Developed by:
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Post-Secondary Department
Ministry of Education
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EXPLAIN EMERGENCY BRAKING AND STEERING PROCEDURES	EXPLAIN THE IMPORTANCE OF GOOD HOUSEKEEPING	EXPLAIN THE COMPANY BLASTING AND GUARDING PROCEDURES	DESCRIBE THE BASIC LAYOUT OF THE PIT AREA	EXPLAIN THE USE OF FIRE SUPPRESSION SYSTEMS AND FIRE EXTINGUISHERS	DESCRIBE MISS-HOLES AND MISS-HOLE REPORTING PROCEDURES	EXPLAIN THE COMPANY'S POWER CABLE HANDLING POLICY
DESCRIBE THE PROCEDURES FOR A COLD WEATHER ENGINE START (OPTIONAL SECTION)						
STOCKPILE MATERIAL	DEMONSTRATE DITCHING TECHNIQUES	DEVELOP SIDEHILL CUTS	CLEAN THE SHOVEL AREA	CLEAN UP FLYROCK AFTER A BLAST	REBUILD THE DUMP AND CONSTRUCT A SAFETY BERM	REPAIR ROADS

THE DACUM APPROACH

DACUM is a systematic model of program development used in designing career, technical and vocational training programs. The first step in the process is to establish the skills expected of a graduate entering employment. These skills are generally specified by a representative employer group in a workshop conducted by program development specialists. The product of this activity is a skill profile chart. This chart is then circulated both to the participants and to a number of other employers for review prior to further development.

The next step is to specify learner-centred performance objectives. These include not only the skills a learner must demonstrate but also the conditions under which the skill is to be performed and the criteria used to determine the acceptable standard of performance.

Once the performance objectives have been set, there are three important steps to complete the development process. These are generally undertaken by an instructor or group of instructors, in the following order:

1) Appropriate evaluation instruments are chosen or created to assess student capability in relation to the specific objectives of the program.

2) A variety of suitable instructional techniques and learning experiences are chosen to facilitate learning of the skills and knowledge required to meet the objectives.

3) Instructional resources (texts, films, models, and other learning aids) are selected or created.

READING THE SKILL PROFILE CHART

A skill profile chart (often referred to as a DACUM Chart), is a graphic representation of the essential skills expected of a student graduating from a specific career, vocational or technical program.

Broad areas of employee responsibility are shown in the boxes on the left of the chart. These are called "general areas of competence". The tasks or skills related to each are sequenced along the horizontal track to the right of the general area of competence.

FOR FURTHER INFORMATION

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ADDITIONAL COPIES

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